

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: <div style="text-align: center; margin-top: 20px;">see form PCT/ISA/220</div> <div style="text-align: center; margin-top: 20px;">7/7</div>		<div style="text-align: right; font-size: 2em; font-weight: bold; margin-bottom: 10px;">PCT</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px; text-align: center;"> REC'D 02 MAY 2005 PCT </div> <div style="text-align: center; font-weight: bold;">WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)</div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Date of mailing (day/month/year) see form PCT/ISA/210 (second sheet) </div>
Applicant's or agent's file reference see form PCT/ISA/220		FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/DK2004/000911	International filing date (day/month/year) 22.12.2004	Priority date (day/month/year) 22.12.2003
International Patent Classification (IPC) or both national classification and IPC B01J19/00, G06K9/64, G01N15/14		
Applicant CARLSBERG AS		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application



2. FURTHER ACTION

If a demand for International preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA: <div style="text-align: center; margin-top: 10px;">  </div> <div style="margin-top: 5px;"> European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 </div>	Authorized Officer <div style="text-align: center; margin-top: 10px;">  </div> <div style="margin-top: 5px;"> Veefkind, V Telephone No. +31 70 340-1017 </div>
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000911

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☐ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☒ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000911

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	7,9,11,38-40
	No: Claims	1-6,8,10,12-37,41-47
Inventive step (IS)	Yes: Claims	7,9,11,38-40
	No: Claims	1-6,8,10,12-37,41-47
Industrial applicability (IA)	Yes: Claims	1-47
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Reference is made to the following documents:

- D1: WO 2004/028682 A (CARLSBERG A/S; CHRISTENSEN, SOEREN, FLYGENRING; TRUELSEN, JENS, HOEG;) 8 April 2004 (2004-04-08)
- D2: WO 98/47838 A (ZENECA LIMITED; GARMAN, ANDREW, JOHN; PEARS, DAVID, ALAN) 29 October 1998 (1998-10-29)
- D3: COX G S ET AL: "A survey of point pattern matching techniques and a new approach to point pattern recognition" COMMUNICATIONS AND SIGNAL PROCESSING, 1992. COMSIG '92., PROCEEDINGS OF THE 1992 SOUTH AFRICAN SYMPOSIUM ON CAPE TOWN, SOUTH AFRICA 11 SEPT. 1992, NEW YORK, NY, USA, IEEE, US, 1992, pages 243-248, XP010106385 ISBN: 0-7803-0807-7
- D4: TRAU M ET AL: "NOVEL COLLOIDAL MATERIALS FOR HIGH-THROUGHPUT SCREENING APPLICATIONS IN DRUG DISCOVERY AND GENOMICS" ADVANCED MATERIALS, VCH VERLAGSGESELLSCHAFT, WEINHEIM, DE, vol. 13, no. 12/13, 4 July 2001 (2001-07-04), pages 975-979, XP001130155 ISSN: 0935-9648

Re Item II

Priority

1. Reference is made to document D1.
D1 is a previous application of the present applicant.

The priority claim of the present application appears partially invalid.

2. The present application claimed a priority based on a Danish and a US application filed on 22.12.2003 and 12.04.2004. At this stage of the examination, although the Examiner was not provided with a copy of the priority document, it appears that the priority claim cannot be valid (Article 4 Paris Convention).

D1 is an application of the present applicant, which was published on 08.04.2004 after the claimed priority dates but before the International filing date of the present application (22.12.2004). The priority documents for D1 are applications filed on 27.09.2002 and 26.06.2003 (i.e., before the priority dates of the present application),

The same applicant and inventors are designated in both applications.

D1 explicitly discloses the subject-matter of claims 1-6,8,10,12-37 and 41-47 of the application (Cf. more particularly: claims 1,20,59-110).

Therefore, it would appear that the applications from which priority is claimed for the present application are not a first application in the meaning of Article 4 Paris Convention, at least for the subject-matter of claims 1-6,8,10,12-37,41-47.

3. Whilst the priority claim of the present application appears partially invalid, this Opinion is established as if D1 is part of the prior art according to Rule 64.1 PCT for the subject-matter of claims 1-6,8,10,12-37,41-47.
More careful consideration of all priority documents involved may be necessary to establish the exact extent of the validity of the priority.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. D1 is considered as state of the art according to Rule 64.1 PCT (see Item II, above). The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-6,8,10,12-37,41-47 is not new in the sense of Article 33(2) PCT.
 - 1.1 D1 discloses encoded beaded polymer matrices comprising a plurality of spatially immobilised particles (see claim 1) comprising a fluorescently detectable marker (see claim 19). At least two 2-D projections are recorded (see claim 59).
Thus, the subject-matter of claim 1 and 8 is disclosed by D1. The subject-matter of dependent claims 2-6, as well as claims 8,10,12-37,41-47 can be found more or less wordily in claims 60-110 of D1.
 - 1.2 D2 describes polymeric beads comprising a random pattern of microparticles which are polymerized into the beads, and their use in making encodable combinatorial

libraries. The encapsulated microparticles are conveniently distinguished by use of coloured or fluorescent components. The beads are (2-D-) imaged from at least 2 angles and the constellation of microparticles is expressed as a distance matrix for each bead (see pages 7 and 8). These are used for comparison of the beads during and after synthesis of the library.

Thus, D2 destroys the novelty of the subject-matter of claims 1,2,8 and 42-44,47.

2. In the absence of surprising effect the subject-matter of claims 45 and 46 cannot be considered as involving an inventive step (Article 33(3) PCT) .w.r.t. the subject-matter of D2. These are merely some of the alternatives the skilled person would readily choose from when wishing to detect fluorescent markers.
3. The subject-matter of claims 7,9,11 and 38-40 appears to comply with Article 33(1) PCT, because they appear to be novel and inventive according to Articles 33(2) and (3) PCT.
 - 3.1 The subject-matter of claim 7 and claims dependent on (only) claim 7 appears new over D1-D4. None of these documents disclose a method with all the features of claim 7.
 - 3.2 D1 is not prior art under Rule 64.1 PCT since the priority of claim 7 and all claims depending on (only) claim 7 appears to be valid. D1 cannot be used for assessment of inventive step for these claims.

None of the documents D2-D4 when taken alone, or in combination hints at the combination of features in claim 7. The subject-matter of claim 7, as well as claims 9,11,38-40, therefore is also considered to involve an inventive step.

Re Item VI

Certain documents cited

Certain published documents

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/DK2004/000911

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 2004/028682	08.04.2004	26.09.2003	27.09.2002 26.06.2003

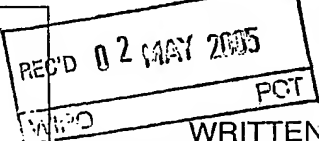
Re Item VIII

Certain observations on the international application

1. The combination of claims 7 and 38 leads to a lack of clarity (Article 6 PCT). Claim 7 specifies deriving from the distance matrices the full set of derivable triangles, whereas claim 38 specifies deriving all of the possible geometrical figures. Yet claim 38 depends on claim 7. The combination of these claims therefore leads to confusion and thus to a lack of clarity. In addition, "all possible geometrical figures" is an unclear term per se, since it is unclear when a figure is "geometrical" or not. Also this leads to a lack of clarity under Article 6 PCT for claim 38. Claim 39 appears superfluous as claim 38 already depends on claim 7, specifying triangles.
2. Claim 43 lacks clarity (Article 6 PCT) since it refers to non-existing claim 100.

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International Patent Classification (IPC) or both national classification and IPC B01J19/00, G06K9/64, G01N15/14		
Applicant CARLSBERG AS		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application


2. **FURTHER ACTION**

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For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA: <div style="text-align: center; margin-top: 10px;">  </div> European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Veefkind, V Telephone No. +31 70 340-1017
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000911

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☐ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☒ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/DK2004/000911

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	7,9,11,38-40
	No: Claims	1-6,8,10,12-37,41-47
Inventive step (IS)	Yes: Claims	7,9,11,38-40
	No: Claims	1-6,8,10,12-37,41-47
Industrial applicability (IA)	Yes: Claims	1-47
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and /or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Reference is made to the following documents:

- D1: WO 2004/028682 A (CARLSBERG A/S; CHRISTENSEN, SOEREN, FLYGENRING; TRUELSEN, JENS, HOEG;) 8 April 2004 (2004-04-08)
- D2: WO 98/47838 A (ZENECA LIMITED; GARMAN, ANDREW, JOHN; PEARS, DAVID, ALAN) 29 October 1998 (1998-10-29)
- D3: COX G S ET AL: "A survey of point pattern matching techniques and a new approach to point pattern recognition" COMMUNICATIONS AND SIGNAL PROCESSING, 1992. COMSIG '92., PROCEEDINGS OF THE 1992 SOUTH AFRICAN SYMPOSIUM ON CAPE TOWN, SOUTH AFRICA 11 SEPT. 1992, NEW YORK, NY, USA, IEEE, US, 1992, pages 243-248, XP010106385 ISBN: 0-7803-0807-7
- D4: TRAU M ET AL: "NOVEL COLLOIDAL MATERIALS FOR HIGH-THROUGHPUT SCREENING APPLICATIONS IN DRUG DISCOVERY AND GENOMICS" ADVANCED MATERIALS, VCH VERLAGSGESELLSCHAFT, WEINHEIM, DE, vol. 13, no. 12/13, 4 July 2001 (2001-07-04), pages 975-979, XP001130155 ISSN: 0935-9648

Re Item II

Priority

1. Reference is made to document D1.
D1 is a previous application of the present applicant.

The priority claim of the present application appears partially invalid.

2. The present application claimed a priority based on a Danish and a US application filed on 22.12.2003 and 12.04.2004. At this stage of the examination, although the Examiner was not provided with a copy of the priority document, it appears that the priority claim cannot be valid (Article 4 Paris Convention).

D1 is an application of the present applicant, which was published on 08.04.2004 after the claimed priority dates but before the International filing date of the present application (22.12.2004). The priority documents for D1 are applications filed on 27.09.2002 and 26.06.2003 (i.e., before the priority dates of the present application),

The same applicant and inventors are designated in both applications.

D1 explicitly discloses the subject-matter of claims 1-6,8,10,12-37 and 41-47 of the application (Cf. more particularly: claims 1,20,59-110).

Therefore, it would appear that the applications from which priority is claimed for the present application are not a first application in the meaning of Article 4 Paris Convention, at least for the subject-matter of claims 1-6,8,10,12-37,41-47.

3. Whilst the priority claim of the present application appears partially invalid, this Opinion is established as if D1 is part of the prior art according to Rule 64.1 PCT for the subject-matter of claims 1-6,8,10,12-37,41-47.
More careful consideration of all priority documents involved may be necessary to establish the exact extent of the validity of the priority.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. D1 is considered as state of the art according to Rule 64.1 PCT (see Item II, above). The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-6,8,10,12-37,41-47 is not new in the sense of Article 33(2) PCT.
 - 1.1 D1 discloses encoded beaded polymer matrices comprising a plurality of spatially immobilised particles (see claim 1) comprising a fluorescently detectable marker (see claim 19). At least two 2-D projections are recorded (see claim 59). Thus, the subject-matter of claim 1 and 8 is disclosed by D1. The subject-matter of dependent claims 2-6, as well as claims 8,10,12-37,41-47 can be found more or less wordily in claims 60-110 of D1.
 - 1.2 D2 describes polymeric beads comprising a random pattern of microparticles which are polymerized into the beads, and their use in making encodable combinatorial

libraries. The encapsulated microparticles are conveniently distinguished by use of coloured or fluorescent components. The beads are (2-D-) imaged from at least 2 angles and the constellation of microparticles is expressed as a distance matrix for each bead (see pages 7 and 8). These are used for comparison of the beads during and after synthesis of the library.

Thus, D2 destroys the novelty of the subject-matter of claims 1,2,8 and 42-44,47.

2. In the absence of surprising effect the subject-matter of claims 45 and 46 cannot be considered as involving an inventive step (Article 33(3) PCT) .w.r.t. the subject-matter of D2. These are merely some of the alternatives the skilled person would readily choose from when wishing to detect fluorescent markers.
3. The subject-matter of claims 7,9,11 and 38-40 appears to comply with Article 33(1) PCT, because they appear to be novel and inventive according to Articles 33(2) and (3) PCT.
 - 3.1 The subject-matter of claim 7 and claims dependent on (only) claim 7 appears new over D1-D4. None of these documents disclose a method with all the features of claim 7.
 - 3.2 D1 is not prior art under Rule 64.1 PCT since the priority of claim 7 and all claims depending on (only) claim 7 appears to be valid. D1 cannot be used for assessment of inventive step for these claims.

None of the documents D2-D4 when taken alone, or in combination hints at the combination of features in claim 7. The subject-matter of claim 7, as well as claims 9,11,38-40, therefore is also considered to involve an inventive step.

Re Item VI

Certain documents cited

Certain published documents

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/DK2004/000911

Application No. Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 2004/028682	08.04.2004	26.09.2003	27.09.2002 26.06.2003

Re Item VIII

Certain observations on the international application

1. The combination of claims 7 and 38 leads to a lack of clarity (Article 6 PCT). Claim 7 specifies deriving from the distance matrices the full set of derivable triangles, whereas claim 38 specifies deriving all of the possible geometrical figures. Yet claim 38 depends on claim 7. The combination of these claims therefore leads to confusion and thus to a lack of clarity. In addition, "all possible geometrical figures" is an unclear term per se, since it is unclear when a figure is "geometrical" or not. Also this leads to a lack of clarity under Article 6 PCT for claim 38. Claim 39 appears superfluous as claim 38 already depends on claim 7, specifying triangles.
2. Claim 43 lacks clarity (Article 6 PCT) since it refers to non-existing claim 100.